

NewsRelease



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NASA LANGLEY CERES INSTRUMENTS TO LAUNCH DEC. 16 Langley Contributes Instruments to Complete 'Global Picture' of Earth

Scientists will soon gain new knowledge of the atmosphere, oceans, land, and their role in global environmental change. And NASA Langley's Clouds and the Earth's Radiant Energy System (CERES) instruments will be part of an international effort to complete this picture of Earth as a total system when it launches into orbit on the NASA Terra satellite December 16.

CERES is one of five instruments that will fly aboard Terra and contribute to the comprehensive look at the Earth system. Terra is a joint Earth Observing System venture between the United States, Japan, and Canada. Terra, with CERES, will collect for the first time ever, simultaneous global information about clouds, water vapor, and the Earth's radiation balance. This is the energy that reaches the Earth from the Sun and the energy radiated from Earth into space.

"We are looking for a whole new level of accuracy in these radiation energy flows," said Langley's Dr. Bruce Wielicki, one of the lead scientists for the CERES project. "To achieve this, we will fly two instruments on Terra. One will scan and immediately observe the entire Earth from equator to pole, and the second one will scan in angles to cover the hemisphere of radiation flow, which changes dramatically from upward direction to the limb, or edge, of the Earth."

Solar and Earth-emitted energy data and cloud measurements taken by CERES will be used to provide a critical check for the models used by scientists to simulate global climate and predict the effects of global warming, according to lead scientists Wielicki and Dr. Bruce Barkstrom.

Some Terra products will be produced by combining data from more than one instrument, allowing the instrument teams to develop broad science approaches to specific problems.

"The Terra observatory brings entirely new capabilities by combining multiple instruments looking at the Earth at the same place and time," said Wielicki. "While CERES measures the solar energy reflected back to space and Earth thermal energy emitted to space, the other instruments will bring new, more accurate measurements of the clouds and aerosols that cause changes in the energy flow, allowing for new studies of cause and effect in the climate system."

Analysis of the CERES data will lead to a better understanding of the role of clouds and the energy cycle in global climate change. The CERES instruments will extend the data collection begun in the 1980s by NASA's Earth Radiation Budget Satellite (ERBS).

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“We are very excited to continue the climate record started with ERBS, incredibly still alive after fifteen years in space,” continued Wielicki. “This climate record is a critical measure of the amount of radiation energy flowing in and out of the planet and is likely to change as the climate changes. We are also very interested in studying the changes which have occurred during and since the recent 1997/1998 major El Nino.”

CERES data from a NASA satellite launched in November 1997, the Tropical Rainfall Measuring Mission (TRMM), is already helping scientists understand the flow of radiation in the tropics, but the new instruments on Terra will extend these observations to cover the entire globe.

NASA Langley Research Center, Hampton, Va., designed and manages the two CERES instruments that will fly aboard Terra. The CERES instruments were built by the TRW Corp., Redondo Beach, Calif.

NASA Goddard Space Flight Center, Greenbelt, Md., is responsible for the development and launch of the satellite, and for the controlling the ground operations system. The Terra Project Office, located at NASA Goddard, manages the satellite for NASA's Office of Earth Science in Washington, D.C.

Follow-on CERES instruments are planned which will create a continuous 15-year history of highly accurate radiation and cloud data for climate analyses.

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(Terra is scheduled for launch from Vandenberg Air Force Base, Calif., on Dec. 16. The 25-minute launch window opens at 1:33 p.m. EST (10:33 a.m. PST). Separation of the spacecraft from its launch vehicle will occur about 14 minutes after launch.

NASA Television will broadcast the launch and concurrent science briefing live. The briefing will feature a question-and-answer session for media from participating NASA centers. NASA TV is available on GE-2, transponder 9C (C-Band), located at 85 degrees West longitude, vertical polarization with a frequency of 3880 MHz and audio of 6.8 MHz.

More CERES information may be obtained at <http://asd-www.larc.nasa.gov/ceres/ASDceres.html> or by contacting the NASA Langley Research Center, Hampton, Va., at the number listed above. The Terra web site can be found at <http://terra.nasa.gov/>.)



Clouds and the Earth's Radiant Energy System
(CERES) Instrument